

Smart mobility

Future of (passenger) transportation

Focus on autonomous cars

15-16 November 2017

A recent topic (1/2)

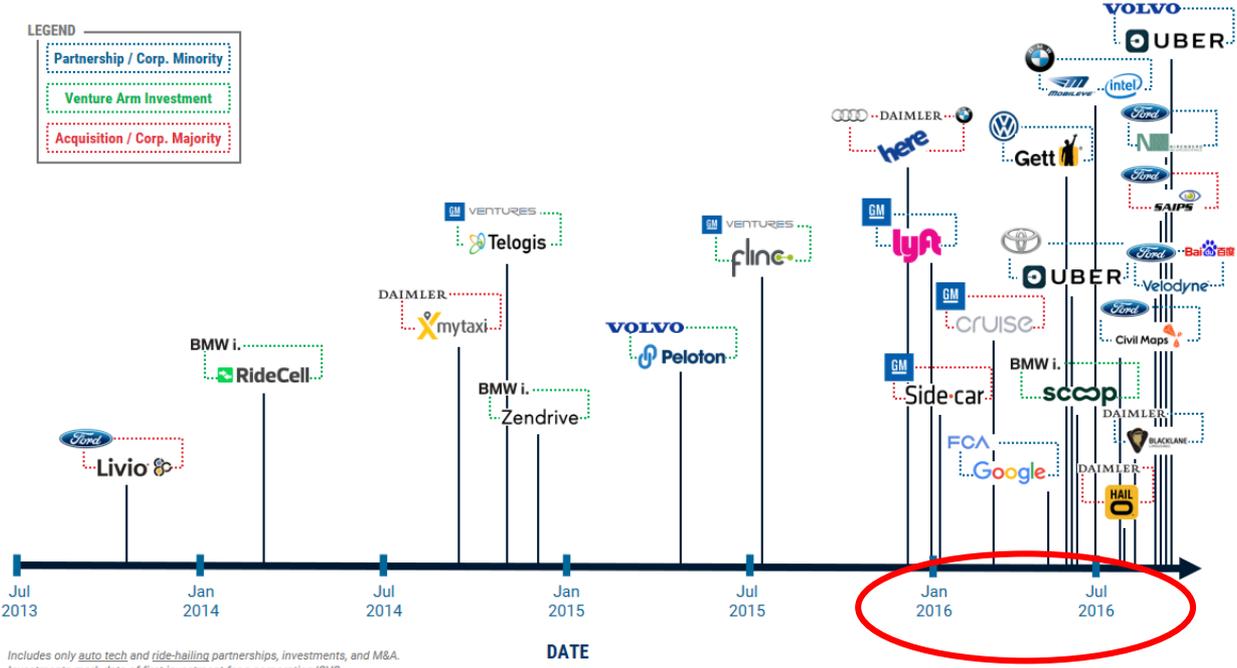
Futuristic cars
were flying cars !!



A recent topic (2/2)

Emergence of the self-driving vehicle

Major tech partnerships, investment & acquisitions



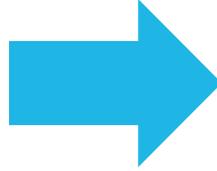
Last year

Source: CBInsights

Car design evolution (1/2)



50 years



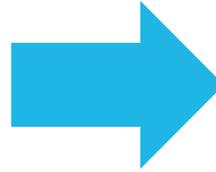
Steady evolution

- Similar shape
- Similar size
- 4 wheels
- 4 doors
- etc

Car design evolution (2/2)



15 years



Only the steering wheel still exists (useless soon)

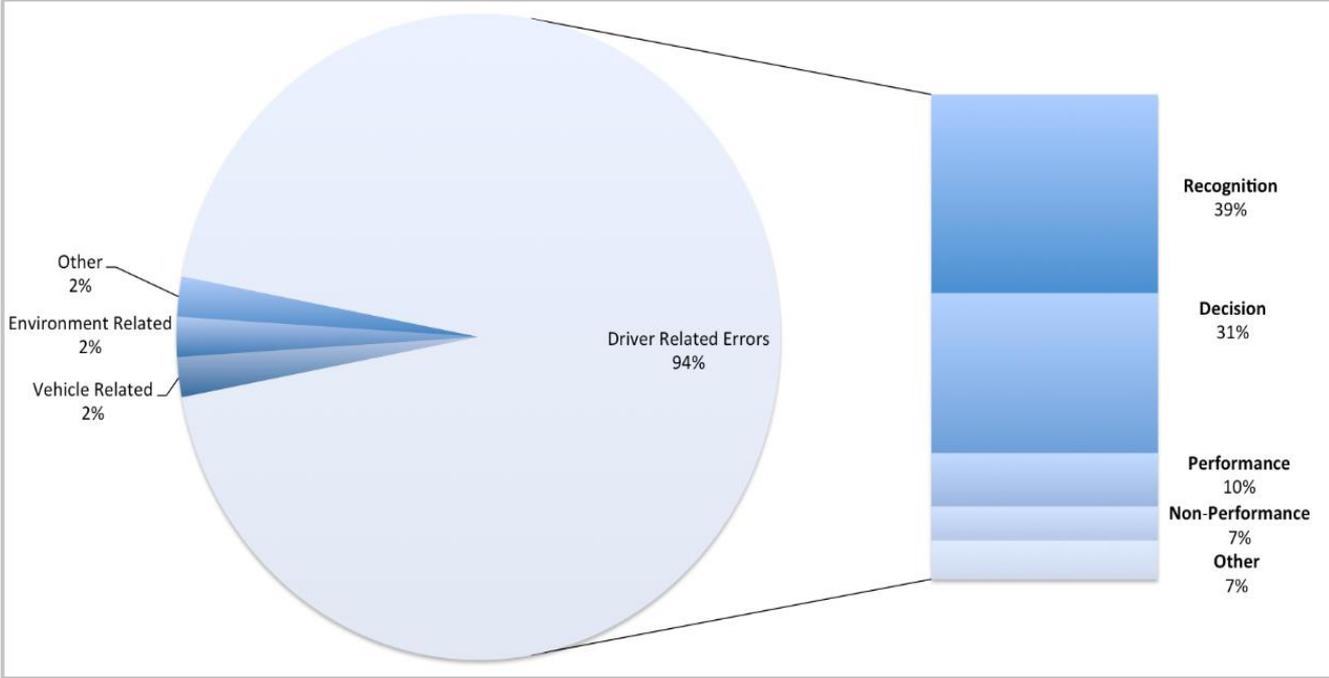
- Massive use of electronics
- Electric motorization
- Electronics and mechanics are becoming more and more technologically split
 - You can download a app to transform your car into an autonomous car !

Main drivers

Safety (1/2)

Towards zero accident

- 94% of errors are driver based

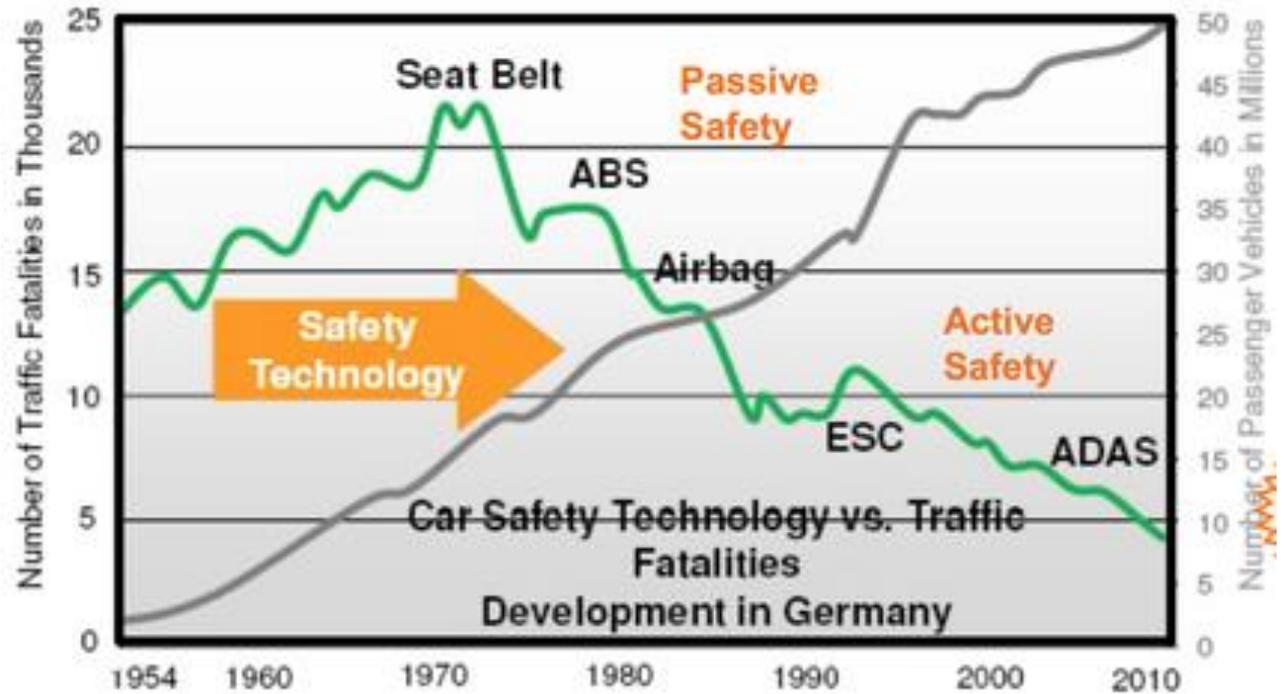


Source: McMinn Law Firm, based on the National Motor Vehicle Crash Causation Survey from the NHTSA, 2015

Safety (2/2)

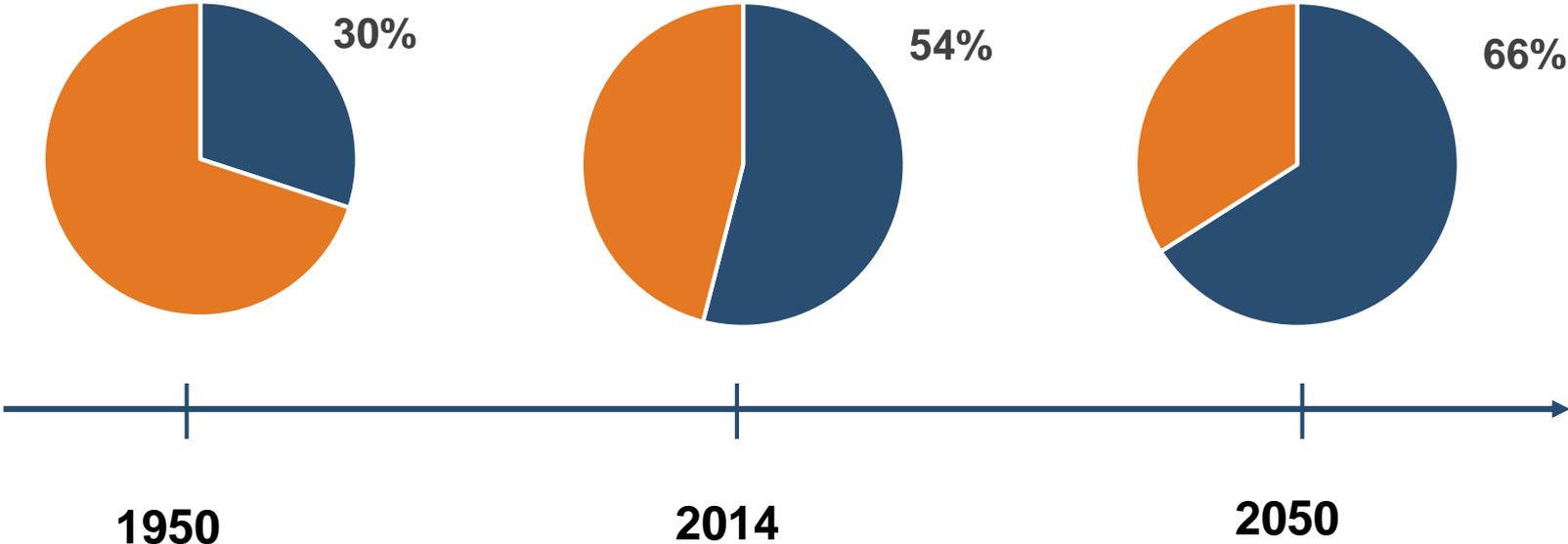
Technology integration has a strong effect on vehicle fatalities decrease

- Cars are more and more secure
- Integration takes time though



Urbanization rate (1/2)

Almost 70% of world population will live in a city by 2050



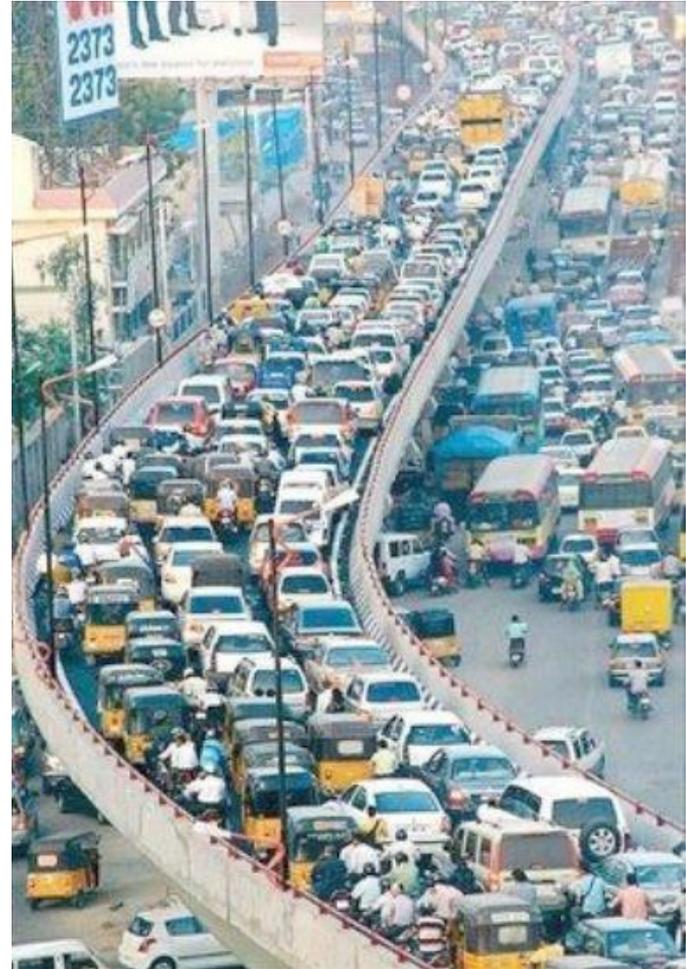
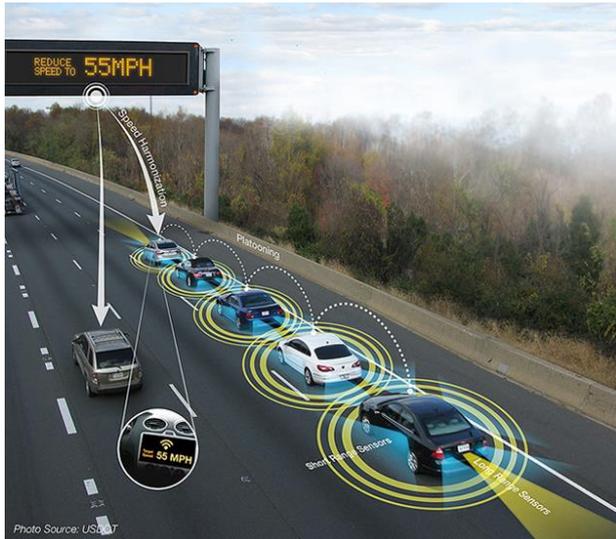
Source: UNO

- World population living in urban city
- World population living in rural areas

Urbanization rate (2/2)

Huge impacts on environment

- Platooning
 - ⇒Reduced traffic jams
- Better driving patterns
 - Reduced energy pollution



Massive opportunities for the ecosystem

Equipment vendors (Tier1) are building some vehicles

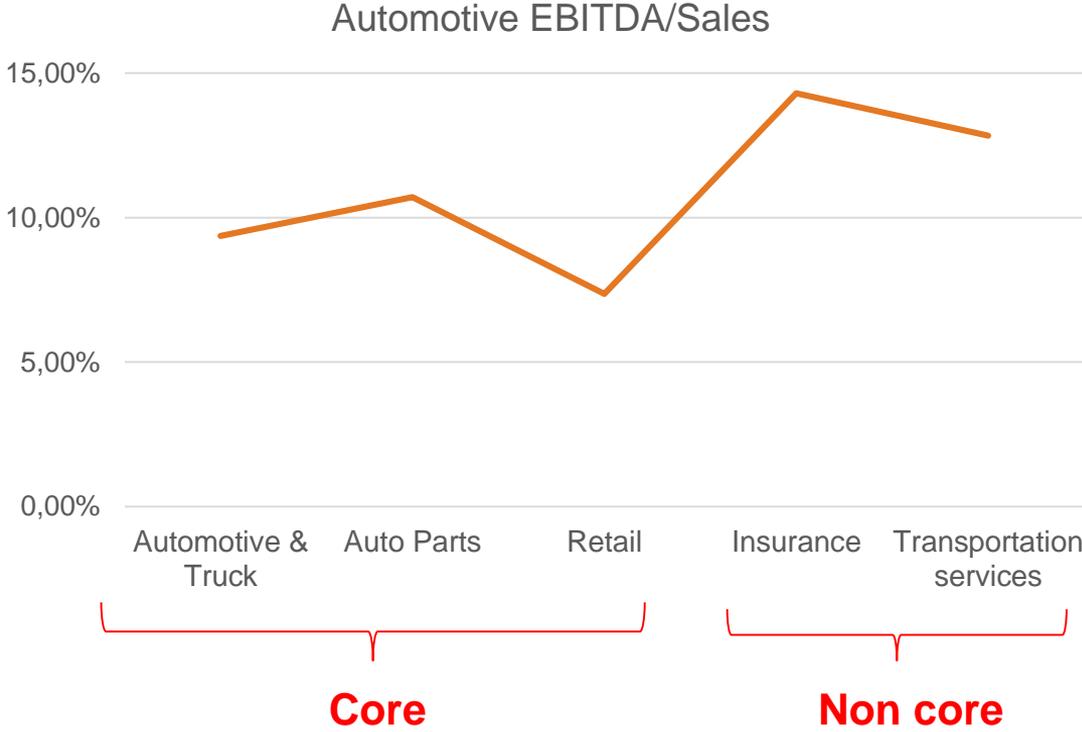
- Pilots with shuttles

Servicization for OEM

- Additional revenues
- Better margins

Service provider strategies

- New competition ?



Main challenges

Cultural challenges

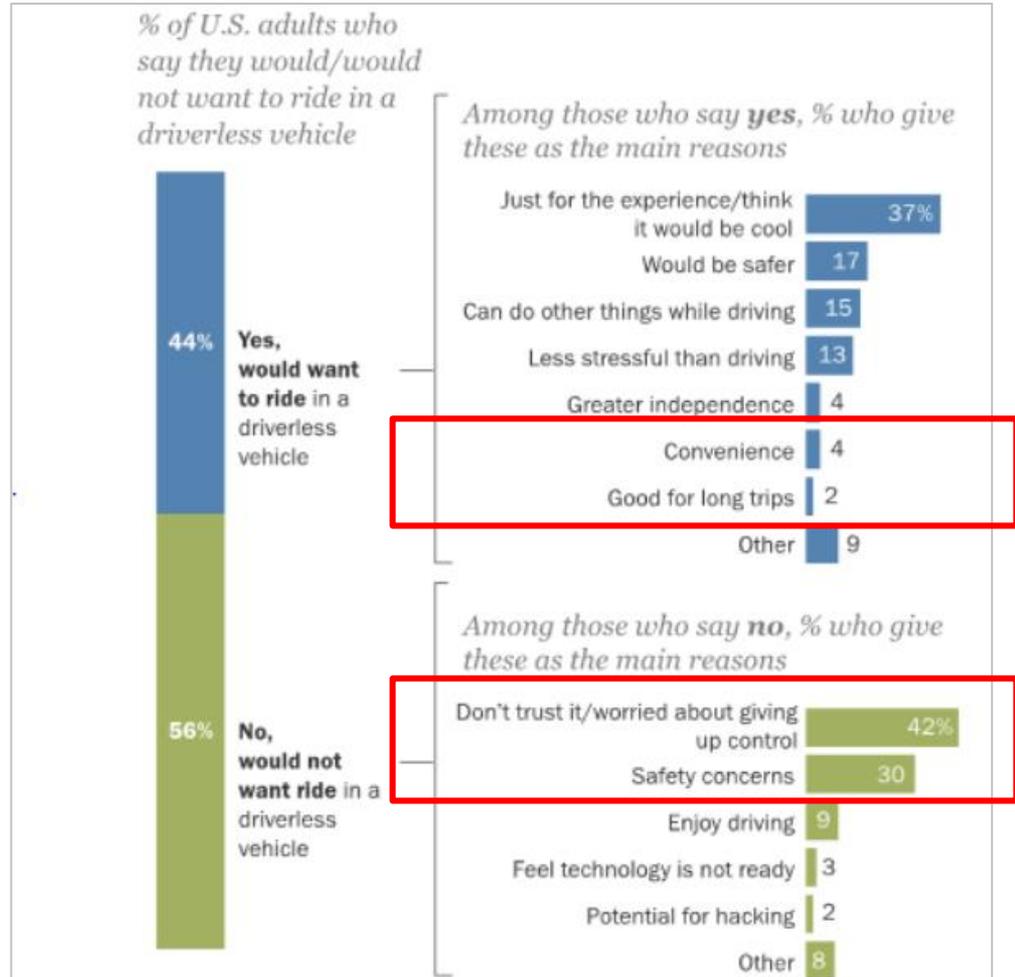
Real aversion for autonomous cars

Cautious and even worried consumers

Paradox

- Safety concerns as a main threat

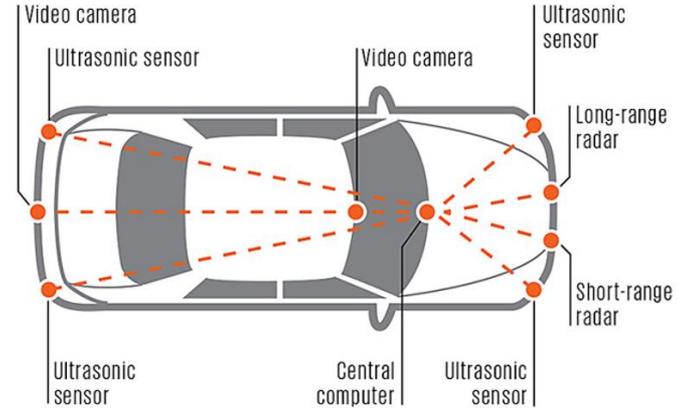
Source: Automation in Everyday Life, Pew center, October 2017



Financial challenges

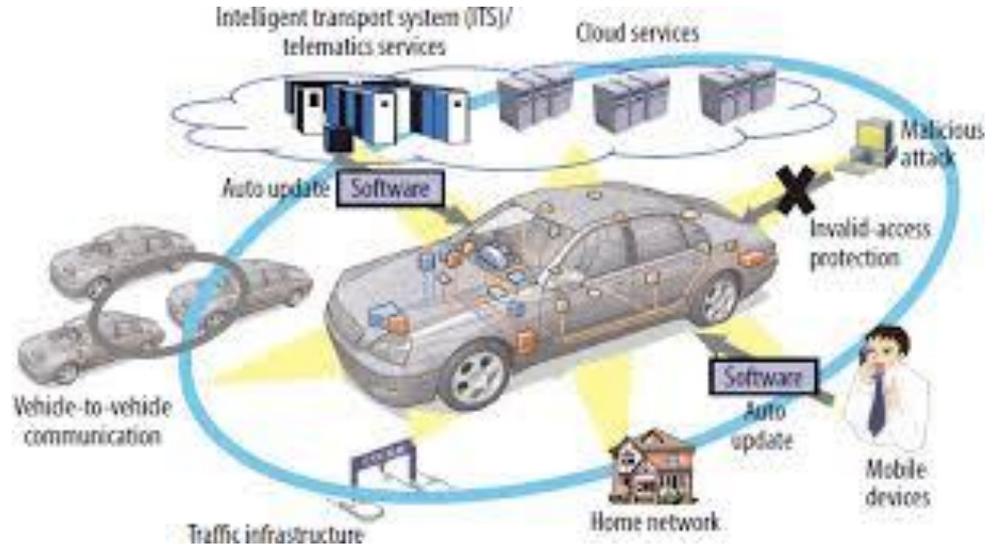
More expensive cars

- CAPEX
 - Cost of surroundings detection technology
 - OPEX
 - Connected by design : Who will pay the connectivity bill ?
- ⇒ New business model ?



Need to build a costly infrastructure

- V2X: Interaction with the environment
 - Infrastructure itself
 - highways
 - public infrastructure
 - Smart city based applications
- ⇒ Main interrogation : who will pay ?



Technical challenges

Connectivity reliability

- Automotive is one the most active industry in 5G specifications
- Specific association

Reliability in all conditions

- Bad weather
- Specific situations: dealing with public works and emergency vehicles

Security

- Hackable cars
- Same issues for connected cars

Need to manage non-autonomous cars

- Self-driving car adoption will be progressive



Jeep-Cherokee security scandal in summer 2015



Source: Wired

A self-driving shuttle in Las Vegas got into an accident on its first day of service

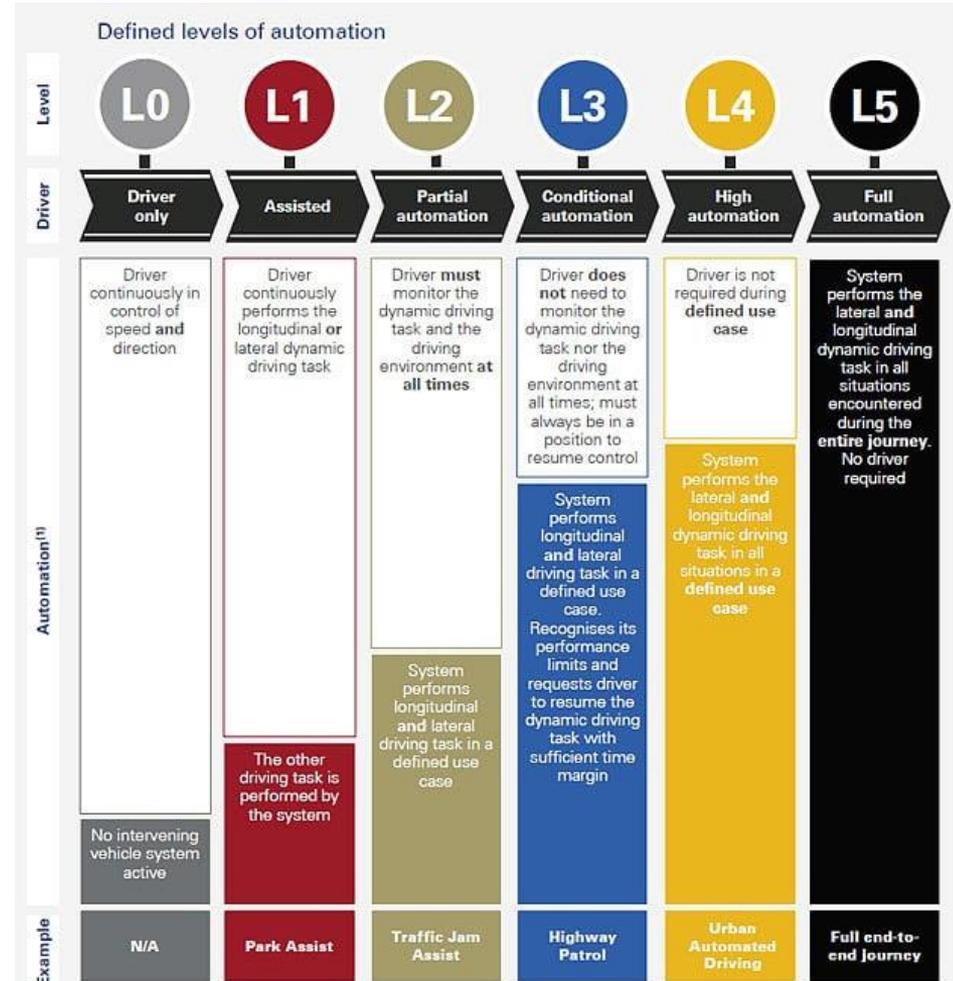
- A Las Vegas-based self-driving shuttle service celebrated its launch day by getting into an accident with a human driver, according to a local news report
- The shuttle hit the front end of a large delivery truck as the human driver pulled out into the street from a loading bay

Legal challenges

Already an issue for trials...

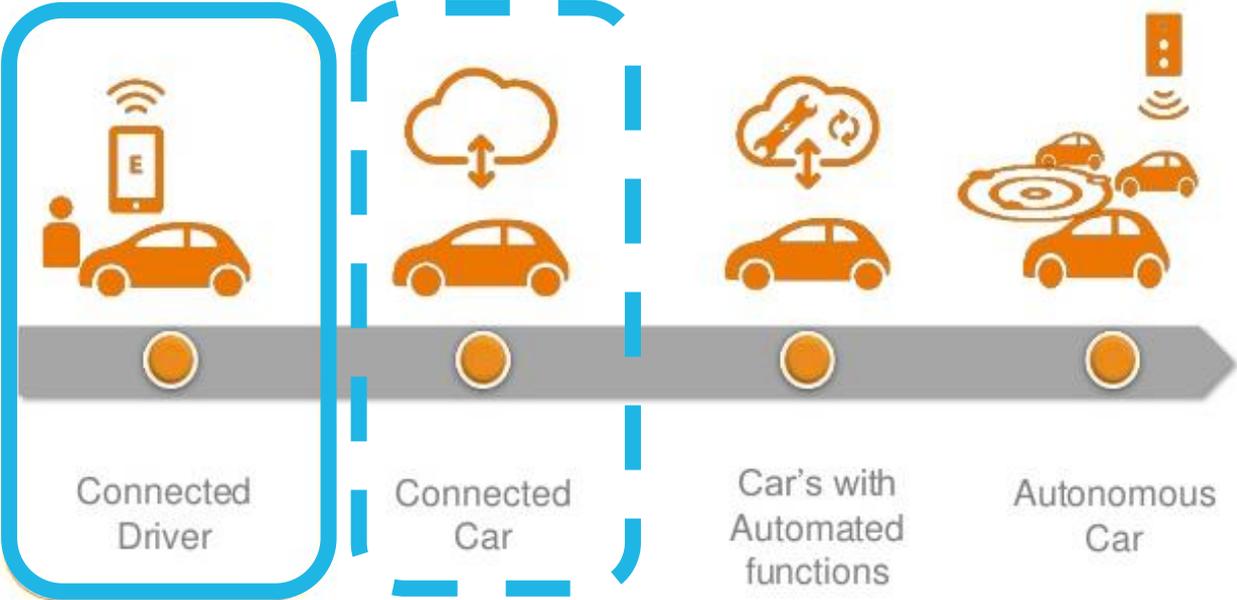
Full automated car on road timeline still undefined

- Not a technological issue...
- Vienna convention



Mass adoption ? Still a long road

Connected evolution timeline in Automotive



We are currently here

Smart mobility

THANK YOU !